



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Michael Wayne Bricker et al.

Serial No.: 10/659,156

Filed: September 10, 2003

For: CABLE JACKET WITH
INTERNAL SPLINES

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: Art Unit: 2831
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: Examiner: Nguyen, Chau N.
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TRANSMITTAL LETTER ACCOMPANYING APPEAL BRIEF

Mail Stop: Appeal Brief - Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted herewith is the Appeal Brief in this application. PTO 2038 Credit Card Payment Form is attached for payment of the filing fee for this Appeal Brief in the amount of \$500.00, pursuant to 37 CFR 41.20(b)(2). *A duplicate copy of this transmittal letter is submitted for that purpose.*

The Notice of Appeal in this Application was mailed on March 8, 2007. Applicants hereby request a two-month extension for the filing of this Appeal Brief, to and including Monday, July 9, 2007. The \$450.00 fee for the two-month extension of time is included in the attached PTO 2038 Credit Card Payment form. As indicated in the enclosed Certificate of Mailing by Express Mail, the Appeal Brief is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service (**Express Mail Label No. EB 305556218 US**), on July 9, 2007.

In the event of overpayment or underpayment, please credit any excess or charge any deficiency to Deposit Account No. 50-3858. *A duplicate copy of this transmittal letter is submitted for that purpose.*

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PATENT
Docket 18013 (SPLG 958-43)

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APPELLANTS' BRIEF

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The Notice of Appeal in this Application was filed on March 8, 2007. A two month extension of time is being filed concurrently herewith to extend the period for filing of this Appeal Brief to Monday, July 9, 2007 (the next Business day following Sunday July 8, 2007).

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I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Tyco Electronics Corporation whose address is 2901 Fulling Mill Road, Middletown, PA 17057.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences which will directly affect, or be directly affected by, or have a bearing on, the decision in this pending appeal.

III. STATUS OF CLAIMS

Presently, claims 1-22 are pending in the subject application and are on appeal. Claims 1-22 stand rejected.

IV. STATUS OF AMENDMENTS

A Final Office Action was mailed November 9, 2006 rejecting all of the pending claims (claims 1-22). No claim amendments were filed subsequent to the Final Office Action. Instead, a Request for Reconsideration was filed January 5, 2007. An Advisory Action was mailed February 2, 2007, indicating that the Request for Reconsideration was considered but did NOT place the application in condition for allowance. A Notice of Appeal was filed on March 8, 2007, concurrently with a Pre-Appeal Brief Request for Review. A Notice of Panel Decision was mailed April 19, 2007 indicating that the Pre-Appeal Brief Request for Review was improper as it exceeded 5 pages in length. In response to a telephone conversation with the Supervising Examiner, the Pre-Appeal Brief Request for Review was resubmitted on April 30, 2007. The undersigned was subsequently notified telephonically by the Patent Office that the resubmitted Pre-Appeal Brief Request for Review would not be considered. Consequently, this Appeal Brief is now being submitted.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary does not limit, in any manner whatsoever, the claim interpretation. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this appeal.

Various embodiments of the invention relate to a cable with internal splines. More specifically, the invention is defined claim-by-claim as set forth below.

Independent claim 1 recites a cable 10 comprising a core 12 comprising at least one twisted pair of insulated wires 18, and a jacket 14 surrounding the core 12. The jacket 14 comprises at least one spline 22 projecting inward from an inner surface 20 of the jacket 14 (page 4, paragraph 14 of the specification and Figure 3). At least a portion 32 of the twisted pair 18 is positioned between the spline 22 and a center of the core 12 (page 5, paragraph 19 of the specification). At least one spline is in contact with the twisted pair to prevent relative movement of the jacket with respect to the twisted pair (page 4, paragraph 16 of the specification).

Claim 2 depends from claim 1 and further recites that the core comprises a filler and that the at least one twisted pair comprises a plurality of twisted pairs arranged around the filler 16 (page 3, paragraph 13 of the specification).

Claim 3 depends from claim 1 and further recites that the at least one spline 22 comprises a plurality of splines 22 projecting inward from the inner surface 20 of the jacket 14 (Figure 3).

Claim 4 depends from claim 1 and further recites that the spline 22 is continuously extending on the inner surface 20 of the jacket 14 (page 4, paragraph 17 of the specification and Figure 2).

Claim 5 depends from claim 1 and further recites that the spline 22 extends along a longitudinal axis 30 of the core 12 (page 4, paragraph 17 of the specification and Figure 2).

Claim 6 depends from claim 1 and further recites that the jacket 14 is extruded over the core 12 (page 5, paragraph 20 of the specification).

Claim 7 depends from claim 1 and further recites that the at least one spline 22 comprises at least two splines 22 projecting inward from the inner surface 20 of the jacket 14 and that the splines 22 are equally spaced from one another (page 6, paragraph 21 of the specification).

Claim 8 depends from claim 1 and further recites that the at least one spline 22 comprises four splines 22 projecting inward from an inner surface 20 of the jacket 14 (Figure 3 and page 6, paragraph 21 of the specification).

Claim 9 depends from claim 1 and further recites that the spline 22 projects radially inwardly from the inner surface 20 of the jacket 14 (Figure 3 and page 6, paragraph 19 of the specification).

Independent claim 10 recites a cable 10 that comprises a core 12 comprising a plurality of twisted pairs of insulated wires 18 and a jacket 14 surrounding the core 12. The jacket 14 comprises a round inner surface 20 and at least one spline 22 projecting inward from the inner surface 20 (page 4, paragraph 14 of the specification and Figure 3). The spline 22 is in contact with at least one of the twisted pairs 18 to prevent relative movement of the jacket 14 with respect to at least one of the twisted pairs 18 without separating one of the plurality of twisted pairs 18 from another of the plurality of twisted pairs 18 (page 4, paragraph 16 of the specification).

Claim 11 depends from claim 10 and further recites that the core 12 comprises a round central core filler 16 (page 3, paragraph 13 of the specification).

Claim 12 depends from claim 10 and further recites that the spline comprises a plurality of splines 22 projecting inward from an inner surface 20 of the jacket 14 (Figure 3).

Claim 13 depends from claim 10 and further recites that the the spline 22 continuously extends on the inner surface 20 of the jacket 14 (page 4, paragraph 17 of the specification and Figure 2).

Claim 14 depends from claim 10 and further recites that the spline 22 extends along a longitudinal axis 30 of the core 12 (page 4, paragraph 17 of the specification).

Claim 15 depends from claim 10 and further recites that the jacket 14 is extruded over the core 12 (page 5, paragraph 20 of the specification).

Claim 16 depends from claim 10 and further recites at least two splines 22 projecting inward from an inner surface 20 of the jacket 14, wherein the splines 22 are equally spaced from one another (page 6, paragraph 21 of the specification).

Claim 17 depends from claim 10 and further recites that four splines 22 project inward from an inner surface 20 of the jacket 14 (page 6, paragraph 21 of the specification).

Claim 18 depends from claim 10 and further recites that the spline 22 projects radially inwardly from the inner surface 20 of the jacket 14 (Figure 3 and page 6, paragraph 19 of the specification).

Independent claim 19 concerns a cable 10 that comprises a core 12 comprising a plurality of twisted pairs of insulated wires 18 and a jacket 14 surrounding the core 12. The jacket 14 comprises an inner surface 20 and a plurality of splines 22 projecting inward from the inner surface 20 (page 4, paragraph 14 of the specification and Figure 3). The plurality of splines 22 are in contact with the plurality of twisted pairs 18 to prevent relative movement of the jacket 14 with respect to the plurality of twisted pairs 18 without separating the plurality of twisted pairs 18 from one another (page 4, paragraph 16 of the specification).

Claim 20 depends from claim 19 and further recites that the the plurality of splines 22 are equally spaced about the core 12 (page 6, paragraph 21 of the specification).

Claim 21 depends from claim 19 and further recites that the core 12 comprises a filler 16 and the plurality of twisted pairs 18 are arranged about the filler 16 (page 3, paragraph 13 of the specification).

Claim 22 depends from claim 19 and further recites that the core 12 comprises a filler 16 and the plurality of twisted pairs 18 are arranged about the filler 16 (page 3, paragraph 13 of the specification).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-22 are rejected under 35 USC Section 103(a) as being unpatentable over Despard (6,310,295) (hereafter “Despard”) in view of Wentworth (GB 725,624) (hereafter “Wentworth”).

VII. ARGUMENT

Applicants respectfully submit that each pending claim in the pending application is patentable over the cited art. Accordingly, Applicants respectfully traverse the rejection of the pending claims, and requests that the rejection be withdrawn and that the pending claims be allowed. In support of these requests, a discussion regarding the patentability of the claimed recitations is set forth below.

As required by the Supreme Court in Graham v. John Deere, 383 U.S. 1, 148 USPQ 459 (1966), when determining obviousness under §103, the following factors must be considered:

- (A) Determining the scope and contents of the prior art;
- (B) Ascertaining the differences between the prior art and the claims in issue;
- (C) Resolving the level of ordinary skill in the pertinent art; and
- (D) Evaluating evidence of secondary considerations. (MPEP §2141(I).

As set forth in MPEP §2141(II), when applying 35 U.S.C. §103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined. Hodosh v. Block Drug Co., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

In the present matter, it is submitted that the outstanding Office Action fails to set forth a legitimate motivation for one of ordinary skill to modify Despard's data cable in a manner that would render obvious the claimed invention. The primary reference to Despard would not suffer the disadvantages or problems reasoned in the Office Action to motivate one of ordinary skill to modify Despard based on the teachings of Wentworth.

Claims 1, 10 and 19 concern cables that include a core that comprises one or more twisted pairs of insulated wires. A jacket surrounds the core and the jacket comprises one or more splines projecting inward from the jacket wherein the spline is in contact with the twisted pair(s) to prevent relative movement of the jacket with respect to the twisted pair(s).

In the outstanding Office Action, it is maintained that Despard discloses a cable comprising a core with at least one twisted pair of insulated wires and a jacket surrounding the core. While the Office Action acknowledges that Despard does not suggest adding to the jacket, at least one spline projecting inward from the inner surface of the jacket, the Office Action maintains that Wentworth makes up for this deficiency. In particular, the Office Action maintains that it would have been obvious to modify the jacket of Despard to add Wentworth's ribs projecting inward from the inner surface of Despard's jacket. The Office Action sets forth three reasons that would allegedly motivate one of ordinary skill to provide Wentworth's ribs on the inner surface of Despard's jacket. The three reasons are i) to provide a cable having an improvement in the case of stripping, ii) to provide air channels for cooling around the insulated wires, and iii) to increase the flexibility of the cable.

It is submitted that the reasoning in the Office Action is without merit. Wentworth teaches that the ribs overcome specific problems and disadvantages that were suffered by the prior art. Despard does not suffer from the problems nor disadvantages that Wentworth seeks to overcome. The Wentworth patent application was filed June 23, 1953 and teaches a construction for a power cable based on 1953 technology and the state of the art in 1953. In contrast, the Despard patent application was filed December 3, 1999, and teaches a construction for a data cable based on 1999 technology and the state of the art in 1999. As such, the available materials, manufacturing techniques, and performance requirements (both physical and electrical) at the time of Despard's invention are much more refined, developed and advanced, as compared to the available materials, manufacturing techniques, and performance requirements that were available and known in 1953 at the time of Wentworth's invention. Therefore, it does not automatically nor necessarily follow that the power cabling problems, circa 1953, overcome by Wentworth would be experienced by Despard's data cable, built in 1999 or up to the filing date of the

present application.

One cannot ignore the fact that forty six (46) years separate the filing dates of Wentworth and Despard. Yet, despite the significant period of time that Wentworth's teachings were readily available and known to the public, no one chose to apply Wentworth's rib construction to a jacket of a twisted pair data cable, before or since Despard's 1999 filing data. If the claimed invention of the present application were obvious, as maintain in the Office Action, why has no one implemented such a cable (prior to applicant's invention)? Similarly, why has no one described the claimed twist pair cable in a printed publication (prior to applicant's patent application)? The answers seem clearly, namely there was no legitimate reason, before applicant's invention, to utilize a jacket with splines to hold in place twisted pair wires.

Beginning with the "stripping" motivation offered in the Office Action to support the combination, namely to provide a cable having an improvement in the case of stripping, the data cable of Despard would not suffer from cracking or tearing during stripping as described in Wentworth. Wentworth describes an insulated electrical wire or cable that has a core that includes a conductor with a covering of plastic that is enclosed within an adjacent layer of the same or similar plastic material. Wentworth explains that the problem within the prior art is that the core insulation is damaged when the outer layer of insulation is removed, for instance when preparing the end of the wire for a joint or termination. Wentworth indicates that the damage to the core insulation occurs due to adhesion of the outer layer of plastic material to the inner layer of plastic material. The adhesion between the inner and outer layers of plastic produces tearing and cracking of the inner layer as the outer layer is drawn away (column 1, lines 13-23). Wentworth goes on to indicate that the damage of tearing and cracking is more likely to occur in cold temperatures and when the inner and outer layers of thermoplastic materials are made from PVC or from a copolymer of PVC and polyvinyl acetate. Wentworth addresses this problem within the prior art by forming shallow ribs on the inner surface of the outer layer that project radically inward "so that the touching of the two layers is reduced to substantially line contacts." Wentworth goes on to explain that the line contact arrangement minimizes the area of contact between the two layers, so that if adhesion between them should occur, the likelihood of damage

to the inner layer when stripping away the outer layer is greatly reduced (column 2, lines 77-82).

Despard's data cable would not experience adhesion between the twisted pairs and the cable housing jacket 30 and thus there is no reason, need, nor advantage in adding Wentworth's ribs to Despard's jacket 30. Despard's data cable would not experience adhesion between the twisted pairs 10 and the jacket 30 since the twisted pairs 10, due to their helical geometry, do not have large areas of continuous contact with the jacket 30. In Despard, the twisted pairs 10 only touch the jacket 30 at separate and discrete points, namely in the separate portions of each twisted pair that are exposed and located adjacent to the inner surface of the jacket 30. As the twisted pair 10 propagates along the length of the jacket 30, each twisted pair rotates in a helical manner which, by its very nature, ensures substantial portions of each twisted pair 10 are separated from the inner surface of the jacket 30. Therefore, due to the helical geometry of a twisted pair configuration, Despard's data cable would experience substantially less direct contact between the twisted pair 10 and the jacket 30, as compared to the amount of contact experienced by single strand wires and cables, as discussed in the background section of Wentworth.

Wentworth's teachings are concerned with cables having individual conductors enclosed in plastic to form single strands, where the group of single strands are then enclosed in a directly adjacent layer of the same or similar plastic (column 1, lines 9-13). Wentworth adds the ribs to produce line contacts between the ribs and the insulation on the individual conductors. When the amount of contact, that is created by the line contact geometry of Wentworth, is compared to the amount of contact, that is created by the point contact geometry of the twisted pairs of Despard, it is clear that Despard already provides a very segmented contact arrangement between the twisted pairs and the jacket which is even more advantageous than the line contacts created between Wentworth's single conductor and the ribs.

Further, Despard's data cable would not experience adhesion simply because the insulator on the twisted pairs 10 and the jacket 30 are formed from dissimilar materials. The jacket 30 is made of rubber, plastic or polymer. The insulator on the twisted pairs 10 is formed

from a polyethylene or fluoropolymer. Polyethylene and fluoropolymer insulators have very different properties and much higher melting points than those of the rubber, plastic or polymer forming the jacket 30. For example, the melting point of a polyethylene or fluoropolymer insulation may be over 700° F, while the melting point of rubber, plastic or PVC may be under 400° F. Because the twisted pairs 10 use insulation formed of a material that is very dissimilar from the materials used to form the jacket 30, no adhesion would be experienced there between. Further, by its very nature, fluoropolymers (e.g., Teflon) used to form the insulation on the twisted pair 10 are extremely resistant to sticking to other materials, and are very tough. Thus, the twisted pairs 10 are covered in a material that is particularly well-suited to avoiding adhesion to the jacket 30 and to avoid tearing.

Further, Despard is intended for a fundamentally different application. Wentworth represents a 1955 patent concerned with forming an electrical wire designed to convey high power. The wire or cable of Wentworth, as a high power carrier, is constructed with certain characteristics tailored and specific to high power applications. In contrast, Despard's cable is not designed, nor intended, for conveying high levels of power, but instead represents a data cable intended to convey data using 1999 technology. Data cables as used in the 1990s and beyond are constructed to provide certain data conveying characteristics (e.g., maintaining low cross talk). Data cables also have different safety requirements as compared to the power cables produced in the 1950s. Data cables in the 1990s and later were constructed with better burn characteristics, such as by providing insulation on individual wires (e.g., Teflon insulation on the twisted pair 10) that has a higher melting point, as compared to the PVC of the jacket 30. In view of the foregoing, it is respectfully submitted that Despard's data cable would not suffer from the problem of adhesion and thus one of ordinary skill would not have been motivated to add Wentworth's ribs to address stripping issues.

Next, turning to the "cooling" motivation offered in the Office Action to support the combination, namely to provide a cable having improved cooling during manufacture, the data cable of Despard would not suffer from heating during manufacture as described in Wentworth. The person of ordinary skill would not have been motivated to add Wentworth's ribs to

Despard's jacket 30 to provide air cooling channels. Despard's data cable is formed in a manner that does not need additional air cooling during the manufacture. Nor is there any indication that the addition of Wentworth's ribs would increase the amount of air cooling that would be of any use during the manufacturing process of Despard. Wentworth discusses at page 2, column 1, lines 4-6 that the effect of adding the ribs further reduces the risk of adhesion during manufacture by cooling that is provided by the existence of the air channels 13 between the inner and outer layers. However, Despard's cable would not experience such heating during manufacture. As clearly shown in each and every cross section of Despard's data cable, there is significant air space already provided within the jacket 30 surrounding the twisted pairs 10. Adding ribs to the jacket 30 would not introduce additional air space, nor improve the air cooling properties of Despard's data cable. Further, Despard's data cable is manufactured in a very different manner than Wentworth's. The twisted pairs 10 are formed separately from, and before extrusion of, the jacket 30 there over. Also, the melting point of the polyethylene or Teflon fluoropolymer insulation used by Despard is significantly higher than that of the jacket. Therefore, heating would not be an issue during manufacture of Despard's data cable as compared to Wentworth's power cable.

Finally, turning to the "flexibility" reasoning offered in the Office Action to support the combination, namely to provide a cable having improved flexibility, the data cable of Despard would not suffer from rigidity problems as described in Wentworth. There is no indication in Despard, nor Wentworth, that Wentworth's ribs would change the flexibility of Despard's cable. The flexibility of Wentworth's cable is limited because the inner and outer insulation layers are made of PVC or a similarly inflexible material. The flexibility of Wentworth's cable is further limited if adhesion occurs between the inner and outer layers. In contrast, Despard uses polyethylene or fluoropolymer insulation on the twisted pairs 10, which is substantially more flexible than PVC and does not adhere to PVC. Thus, there is no suggestion in the prior art that Wentworth's ribs would have any impact upon the flexibility of Despard's cable.

In view of the foregoing, it is respectfully submitted that Despard would not suffer from any problem or disadvantage, that Wentworth suggests to overcome by adding ribs to the jacket.

Thus, a prima facie case of obviousness has not been set forth as the suggested motivations for the combination of Despard and Wentworth are not sound and would not have lead the person of ordinary skill to modify Despard's data cable in the suggested manner.

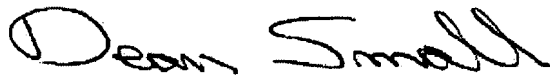
Claims 2-9 depend from claim 1 and are likewise patentable over Despard and Wentworth based at least on their dependency from claim 1.

Claims 11-18 and 21 depend from claim 10 and are likewise patentable over Despard and Wentworth based at least on their dependency from claim 10.

Claims 20 and 22 depend from claim 19 and are likewise patentable over Despard and Wentworth based at least on their dependency from claim 19.

Accordingly, Applicants respectfully request that the rejection of all pending claims be withdrawn, and the pending claims allowed. A favorable action is respectfully requested.

Respectfully Submitted,



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VIII. CLAIMS APPENDIX

1. A cable comprising:

a core comprising at least one twisted pair of insulated wires; and

a jacket surrounding said core, said jacket comprising at least one spline projecting inward from an inner surface of said jacket, wherein at least a portion of said twisted pair is positioned between said spline and a center of said core, wherein said at least one spline is in contact with said twisted pair to prevent relative movement of said jacket with respect to said twisted pair.
2. The cable of claim 1 wherein said core comprises a filler and said at least one twisted pair comprises a plurality of twisted pairs arranged around said filler.
3. The cable of claim 1 wherein said at least one spline comprises a plurality of splines projecting inward from the inner surface of said jacket.
4. The cable of claim 1 wherein said spline is continuously extending on said inner surface of said jacket.
5. The cable of claim 1 wherein said spline extends along a longitudinal axis of said core.
6. The cable of claim 1 wherein said jacket is extruded over said core.
7. The cable of claim 1 wherein said at least one spline comprises at least two splines projecting inward from the inner surface of said jacket, said splines equally spaced from one another.
8. The cable of claim 1 wherein said at least one spline comprises four splines projecting inward from an inner surface of said jacket.

9. The cable of claim 1 wherein said spline projects radially inwardly from said inner surface of said jacket.

10. A cable comprising:

a core comprising a plurality of twisted pairs of insulated wires; and

a jacket surrounding said core, said jacket comprising a round inner surface and at least one spline projecting inward from said inner surface, wherein said at least one spline is in contact with at least one of said twisted pairs to prevent relative movement of said jacket with respect to said at least one of said twisted pairs without separating one of said plurality of twisted pairs from another of said plurality of twisted pairs.

11. The cable of claim 10 wherein said core comprises a round central core filler.

12. The cable of claim 10 wherein said at least one spline comprises a plurality of splines projecting inward from an inner surface of said jacket.

13. The cable of claim 10 wherein said spline is continuously extending on said inner surface of said jacket.

14. The cable of claim 10 wherein said spline extends along a longitudinal axis of said core.

15. The cable of claim 10 wherein said jacket is extruded over said core.

16. The cable of claim 10 wherein said at least one spline comprises at least two splines projecting inward from an inner surface of said jacket, said splines equally spaced from one another.

17. The cable of claim 10 wherein said at least one spline comprises four splines projecting inward from an inner surface of said jacket.

18. The cable of claim 10 wherein said spline projects radially inwardly from said inner surface of said jacket.

19. A cable comprising:

a core comprising a plurality of twisted pairs of insulated wires; and

a jacket surrounding said core, said jacket comprising an inner surface and a plurality of splines projecting inward from said inner surface, wherein said plurality of splines are in contact with said plurality of twisted pairs to prevent relative movement of said jacket with respect to said plurality of twisted pairs without separating said plurality of twisted pairs from one another.

20. The cable of claim 19, wherein said plurality of splines are equally spaced about said core.

21. The cable of claim 10, wherein said core comprises a filler and said plurality of twisted pairs are arranged about said filler.

22. The cable of claim 19, wherein said core comprises a filler and said plurality of twisted pairs are arranged about said filler.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.